

PATENT ABSTRACTS OF JAPAN

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(54) FAT AND OIL COMPOSITION

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a highly safe fat and oil composition which causes little accumulation of body fat, has usefulness in cooking equivalent to that of a common edible oil, and has a good flavor.

SOLUTION: Provided is a fat and oil composition mainly consisting of triglycerides, wherein the rate of medium-chain fatty acids account for 5-23 mass % of all the fatty acids that constitute the composition, and the rate of triglycerides having two medium-chain fatty acid residues in the molecule is 1-20 mass %. It is desirable that the medium-chain fatty acids are 6-12C saturated fatty acids, and that the rate of triglycerides having three medium-chain fatty acid residues in the molecule is at most 3 mass %.

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SUMMARY

in (a) []

in 1] Are an oil and fat composition which mainly consists of triglyceride, and a rate of medium
n fatty acid occupied to total fatty acid which constitutes an oil and fat composition by 5 ~ 23
s %. And an oil and fat composition, wherein a rate of triglyceride occupy to all the triglyceride of
ng two medium-chain-fatty-acid residue in intramolecular is one to 20 mass %.

in 2] The oil and fat composition according to claim 1 whose medium chain fatty acid is saturated
/ acid of the carbon numbers 8~12.

in 3] The oil and fat composition according to claim 1 or 2 whose rate of triglyceride occupy to all
triglyceride which constitutes an oil and fat composition of having three medium-chain-fatty-acid
due in intramolecular is below 3 mass %.

in 4] The oil and fat composition according to any one of claims 1 to 3 whose rate of long chain
rated fatty acid occupied to overall-length chain fatty acid which constitutes an oil and fat
position is below 20 mass %.

in 5] All as an emulsifier at least one sort chosen from sucrose fatty acid ester and polyglyceryl
/ acid ester to this oil and fat composition 0.1 to 3 mass %, Succinic acid monoglyceride 0.01 to 2
s %, and monoglyceride. The oil and fat composition according to any one of claims 1 to 4 which
e at least one sort chosen from diglyceride, sorbitol fatty acid ester, and a sorbitan fatty acid
r contain so that a total amount of 0.1 to 3 mass % and this emulsifier may become 0.3 ~ 5 mass

in 6] An oil and fat composition for cooking containing the oil and fat composition according to
one of claims 1 to 5.

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DETAILED DESCRIPTION

Detailed Description of the Invention

[1]

[1] of the Invention] This invention relates to the oil and fat composition with which edible is
desired. In more detail, there is little body fat accumulation and it is related with the oil and fat
position excellent in the cooking fitness and the flavor as cooking oil.

[2]

scription of the Prior Art] Obesity is in the state which body fat accumulated superfluously, and it
is known well that it will be easy to be accompanied by illnesses of many including cardiovascular
disease, such as metabolic errors, such as diabetes mellitus and hyperlipidemia, hypertension,
coronary heart disease. According to the result of the national nutrition survey which Ministry of
Health and Welfare is performing, since one per seven person of an adult is a pyronic type, obesity is a
major problem also not only in the West but in our country. The fat contained during a meal is one
of the nutrients most closely related with accumulation of body fat.

tion of a superfluous fat may bring about obesity.

over, there is a peculiar taste in a fat and the meal which reduced the fat extremely becomes
it has a low degree of satisfaction easily. When performing deep-fried dishes and stir-fried dishes
using cooking oil is indispensable as a heat carrier.

[3] In order to overcome such a situation, what is called a fat substitute is developed. However, it
the situation which what is seen from a point of safety, physical properties, cooking fitness, and
it can be enough satisfied into these does not have. For example, since sucrose fatty acid
is not absorbed by an alimentary canal but it is excreted in feces, it is indicated that it can be
used as a low-calorie-content oil (U.S. Pat. No. 3600186 specification). Although use is permitted for
a snack confectionery in the U.S. and the potato chips which use sucrose fatty acid ester are
already marketed. The goods which use sucrose fatty acid ester are obliged to indicate "an abdomen
distension and a loose passage may be caused" and "it checks absorption of fat soluble vitamin."

energy density of protein and carbohydrate is below half of a fat. Then, it is known by processing
that physical properties and the flavor like a fat may appear in protein or carbohydrate that the
substitute of low calorie content can be provided (a nutrition review, the 4th volume, No. 4, 23-33
ss, 1996). By using these fat substitutes, it is possible to make ice cream, a bakery product, a
s, etc. which were low-calorie-content-sized. However, there is a fault of tolerance over heat
is unable to use it as a heat carrier of fry or stir-fried dishes deficiently.

[4] It is indicated by the Patent Publication Heisei No. 501812 [four to 7 gazette with the
yonde which comprises long chain fatty acid and short chain fatty acid that low-calorie-content
oils can be provided. However, the triglyceride which consists of short chain fatty acid is not
able as cooking oil which an available cooked article is restricted and is flexible from having a
characteristic smell. Since medium chain fatty acids [energy] easy to be seized, it is known that there
the body fat accumulation (J. Lipid Res. 37, 709-726 (1996)). However, although the safety of the
triglyceride which comprises medium chain fatty acid is originally high, when it takes in so much at
a, causing condition, such as diarrhea, nausea, abdominal pain, heartburn, and anorexia, is
urged. The oil and fat composition with little body fat accumulation to JP. A-300926 A, JP. 8-
80 A, and JP. 10-176181 A which makes diglyceride an active principle is indicated. However, the
ity of the oil and fat composition which contains diglyceride abundantly is not necessarily proved
oughly. It is difficult to manufacture high-concentration diglyceride by low cost, and there is a

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fault which is hard to use it general-purpose from an economical standpoint. Furthermore, the oil and
fat composition with little body fat accumulation to intramolecular as for which more than 31 mass %
contains triglyceride containing two medium-chain-fatty-acid residue is indicated by JP. 8-269478 A
among the oil and fat composition ingredient which consists of diglyceride and triglyceride. In order
that this invention may also make diglyceride an active principle, it has the same problem as said
JP. 4-300926 A, JP. 8-80180 A, and JP. 10-176181 A. Since a lot of medium chain fatty acid is
included, a smoke point is low and foaming is remarkable, there is a fault not suitable for fry cooking.
[0005]

[Problem(s) to be Solved by the Invention] The purpose of this invention is to provide an oil and fat
composition with flavor for there to be little body fat accumulation, it to have cooking fitness
equivalent to usual cooking oil, and still better, and high safety.

[0006]

[Means for Solving the Problem] In order that this invention persons may solve an aforementioned
problem, as a result of repeating examination wholeheartedly, medium-chain-fatty-acid residue
occupied to total-fatty-acid residue comparatively. And a rate of triglyceride occupy to all the
triglyceride of having two medium-chain-fatty-acid residue in intramolecular found out being closely
connected with a degree of body fat accumulation, and completed this invention. Namely, this
invention is an oil and fat composition which mainly consists of triglyceride, and a rate of medium
chain fatty acid occupied to total fatty acid which constitutes an oil and fat composition is five to 23
mass %. And it is related with an oil and fat composition with little body fat accumulation, wherein a
rate of triglyceride occupy to all the triglyceride of having two medium-chain-fatty-acid residue in
intramolecular is one to 20 mass %. As for the above-mentioned medium chain fatty acid, it is
preferred that it is the saturated fatty acid of the carbon numbers 8-12. It is preferred that a rate of
triglyceride occupy to all the triglyceride which constitutes an oil and fat composition of having three
medium-chain-fatty-acid residue in intramolecular is 3 or less % of the weight. It is preferred that a
rate of long chain saturated fatty acid occupied to overall-length chain fatty acid which constitutes
an oil and fat composition is below 20 mass %. When making an oil and fat composition of this
invention contain an emulsifier, especially an emulsifier of specific combination, its fitness, especially
foaming control can be raised further. This invention relates to an oil and fat composition for cooking
which has cooking fitness and preservation stability containing this oil and fat composition which do
not have usual cooking oil and inferiority that there is little body fat accumulation.

[0007]

[Embodiment of the Invention] This invention is explained in detail below. The oil and fat composition
of this invention mainly consists of triglyceride. Triglyceride shall mean that "mainly concerning" is
preferably included [more than 85 mass %] in an oil and fat composition as for more than 95 mass %.
As for medium chain fatty acid, a carbon number shall say fatty acid of 6-12, especially saturated
fatty acid by this invention. As an example, caproic acid, caprylic acid, capric acid, and lauric acid are
mentioned, and the saturated fatty acid especially caprylic acid, and capric acid of 8-10 have a
preferred carbon number. As for long chain fatty acid, a carbon number shall say the saturation and
the unsaturated fatty acid of 14-22 preferably 14 or more by this invention. As long chain fatty acid,
a carbon number preferably 14 or more. The thing of 14-22. For example, myristic acid, palmitic acid,
stearic acid, arachidic acid, long chain saturated fatty acid, such as behenic acid, lignoceric acid, and
cerenic acid, myristoleic acid, pentadecenoic acid, naitoleic acid, a hexadecatrienoic acid,
heptadecenoic acid, oleic acid, linoleic acid, alpha-linolenic acid, gamma-linolenic acid, octadeca
tetraenoic acid, long chain unsaturated fatty acid, such as isosenoic acid, isosadenoic acid,
icosatrienoic acid, tricosatetraenoic acid, arachidonic acid, isosapentaenoic acid, docosenoic acid,
docosadienoic acid, docosapentaenoic acid, and docosahexaenoic acid, is mentioned. Fatty acid
residue is a basis which took OH of the carboxyl group from fatty acid.

[0008] In the oil and fat composition of this invention, it is required for the rate of the medium chain
fatty acid occupied to the total fatty acid which constitutes an oil and fat composition to be five to
23 mass %, and for the rate of triglyceride occupy to all the triglyceride of having two medium-chain-
fatty-acid residue in intramolecular to be one to 20 mass %. Out of this range, the feature that little
body fat accumulation is does not arise. The rate of the above-mentioned medium chain fatty acid is
six to 23 mass % preferably, and the rate of the above-mentioned triglyceride is three to 20 mass %
preferably. It is preferred that the rate of triglyceride occupy to all the triglyceride which constitutes

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oil and fat composition of having three medium-chain-fatty-acid residue in intramolecular is below 2 mass %, it is still more preferred that it is below 2 mass %, and it is further more preferred that it is below 1 mass %. When this rate exceeds 3 mass %, emitting smoke and foaming increase at time of cooking, and it stops being suitable as fats and oils for fries. Emitting smoke and an overment marked to foaming are considered for this rate to be below 1 mass %. It is preferred that rate of the long chain saturated fatty acid occupied to the overall-length chain fatty acid which constitutes an oil and fat composition is below 20 mass %, it is still more preferred that it is below 15 mass %, and it is further more preferred that it is below 7 mass %. Since the stability in low temperature will fall and crystallization of fats and oils will come to be looked at by the oil and fat composition if this rate exceeds 20 mass %, it stops being usually suitable for raw edible one.

20.] After the oil and fat composition with little body fat accumulation of this invention mixes ably the fats and oils and medium chain fatty acid as a raw material. An ester exchange reaction performed under existence of a lipolytic enzyme by making sodium methyllate into a catalyst, under present circumstances, the medium chain fatty acid occupied to the total fatty acid which is alike constitutes an oil and fat composition --- comparatively --- and it can be obtained by adjusting an ester exchange reaction so that the rate of triglyceride occupy to all the triglyceride of having two lithium-chain-fatty-acid residue in intramolecular may enter in said specific range. In addition to above-mentioned adjustment, on the occasion of the above-mentioned ester exchange reaction, up to all the triglyceride which constitutes an oil and fat composition. The triglyceride which it three in intramolecular comparatively medium-chain-fatty-acid residue and/or, by adjusting so : the rate of the long chain saturated fatty acid occupied to the overall-length chain fatty acid : it constitutes an oil and fat composition may enter in said specific range. The oil and fat : position where has little body fat accumulation and the emitting smoke at the time of fry and : ning are reduced and/or which is excellent in freeze thaw stability can be obtained.

10]As petroleum stock fat, usual edible oil and fat, for example, soybean oil, oleum rapae, high acid oleum rapae, corn oil, sesame oil, sesame vegetable oil, a beefsteak plant oil, linseed oil, nut oil, safflower oil. High oleic acid safflower oil, sunflower seed oil, high oleic acid sunflower seed oil, cottonseed cake oil, Grape seed oil, a macadamia-nuts oil, hazelnut oil, Japanese pumpkin seed oil, Walnut oil, camellia oil, tea seed oil, sesame oil, a BORAJ oil, olive oil, rice bran oil. A wheat germ oil, palm kernel oil, palm oil, cacao oil, beef tallow, lard, chicken fat, milk fat, fish oil, seal oil, and oils, these fats and oils hypoisaturatized by quality improvement and these hydrogenated oils, judgement fats and oils, etc. are mentioned.

11] Although medium chain fatty acid was already described, it can replace with medium chain γ acid, or medium-chain-fatty-acid triglyceride can also be used with this. Although the yceride produced by giving said medium chain fatty acid and glycerin to an esterification reaction is a conventional method can be used as medium-chain-fatty-acid triglyceride. Generally are used MCT (MediumChain Triglycerides). The single acid radical in which the carbon number of palm plic fat acid etc. comprises saturated fatty acid of 8-10, or mixed acid group triglyceride, for nple, triglyceride of caprylic acid/capric acid = 80 / 40 ~ 75/25 (mass ratio), can use it ventively.

[2]. Occupy to the rate and all the triglyceride of the medium chain fatty acid occupied to the fatty acid which constitutes an oil and fat composition. The case of the triglyceride which has medium-chain-fatty-acid residue in intramolecular of being comparatively required. The ycene which it has three in intramolecular the medium-chain-fatty-acid residue occupied to all triglyceride which constitutes an oil and fat composition comparatively. And the rate of the long in saturated fatty acid occupied to the overall-length chain fatty acid which constitutes the oil fat composition in the case of being required takes a petroleum stock fat presentation into sideration, adjusts the use rate of petroleum stock fat and medium chain fatty acid, and can set it by measuring the triglyceride composition of the resultant under ester exchange reaction.

[3]When performing the ester exchange reaction which makes sodium methyleate a catalyst. When stock fat and medium-chain-fatty-acid triglyceride are mixed by mass-ratio = 71 / 29 - 3 of the former/latter, A mixture is heated at 80-120 °C under decompression of 100 or less mmHg, and the gas ingredient and moisture which are contained in a raw material mixture are removed. Sodium methyleate 0.02 - 0.5 mass % are added to this, and an ester exchange reaction is formed by stirring at 80-120 °C for 10 to 60 minutes under ordinary pressure and a nitrogen air

current, or decompression of 10 or less mmHg. Completion of a reaction is checked by measuring the triglyceride composition of a resultant with gas chromatography. The stop of a reaction is performed by adding water to a resultant or adding acid, such as phosphoric acid. Then, sufficient rinsing to remove a catalyst and superfluous acid is performed, and a resultant is decolorized and desodorized with a conventional method after distillation.

[0013] When performing an ester exchange reaction using a lipolytic enzyme, petricium stock fat, medium chain fatty acid, or medium-chain-fatty-acid triglyceride is mixed by mass-ratio = 71 / 29 - 97 / 3 of the former/latter, and the activity of a lipolytic enzyme carries out temperature control to the range of 40-100 °K which is the reaction temperature fully demonstrated. A lipolytic enzyme is added at a rate of 0.005 - 10 mass % to a raw material mixture to this, and an ester exchange reaction is performed in 2 to 48 hours. As for this reaction, it is desirable under ordinary pressure to carry out in a nitrogen air current. Completion of a reaction is checked by measuring the triglyceride composition of a resultant with gas chromatography. The stop of a reaction is performed by removing an enzyme by filtration. A resultant is decolorized and deodorized with a conventional method after rinsing and desiccation. When medium chain fatty acid is used, free fatty acid is removed by the thin film type evaporator after the stop of a reaction. The rate of triglyceride of having three medium-chain-fatty-acid residue in intramolecular as the ester exchange reaction using a lipolytic enzyme is insufficient increases. Although there is the feature that the oil and fat composition with many rates of triglyceride of having three medium-chain-fatty-acid residue in intramolecular has little body fat accumulation, at the time of continuous fly cooking, emitting smoke and foaming happen violently and are not preferred. As a lipolytic enzyme, although lipase of Alcaligenes, the Candida group, Rhizopus, a Mucor, or the Pseudomonas origin, the phospholipase A of liver origin, etc. are mentioned, the Candida group or lipase of the Rhizopus origin is especially preferred.

[0013] The oil and fat composition of this invention can also be obtained from the vegetation whose species were improved so that the oil and fat composition of this invention might be produced, for example, a soybean, a rapeseed, a corn, a coconut, a palm, an olive, a flax seed, a sunflower, safflower, a camellia, a cottonseed, and KUHEA by extraction again using transgenic art.

[0016] Fty finess, especially foaming control can be further raised by making the oil and fat composition of this invention contain an emulsifier. As an emulsifier, sucrose fatty acid ester, polyglyceryl fatty acid ester, succinic acid monoglyceride, diglyceride, sorbitol fatty acid ester, a sorbitan fatty acid ester, etc. are mentioned. In this invention, at least one sort of the above-mentioned emulsifier can be chosen, and 0.1 - 8 mass % of the addition to an oil and fat composition is 0.3 to 5 mass % desirable still more preferably as the whole emulsifier. Although sucrose fatty acid ester includes the saturation of sucrose and the carbon numbers 6-22, or ester with unsaturated fatty acid. The degree of average substitution of all the hydroxyl groups is 37.5 to 67.5%, and it is preferred that the rate of polyester more than the triester occupied to all the sucrose fatty acid ester is more than 65 mass %. Although polyglyceryl fatty acid ester includes polyglycerin to decaglycerin, the saturation of the carbon numbers 6-22, or ester with unsaturated fatty acid preferably above triglycerol, it is preferred that the degree of average substitution of all the hydroxyl groups is 20 to 80%. Monoglyceride is preferred although monoglyceride and diglyceride include the saturation of glycerin or diglycerol, and the carbon numbers 6-22 or monoester with unsaturated fatty acid, and diester, respectively. As succinic acid monoglyceride, the succinic acid monoglyceride which esterified succinic acid, monoglyceride, or diglyceride by 3:1 to 0.1:1 is preferred. Sorbitol fatty acid ester and a sorbitan fatty acid ester have mono- [the saturation of sorbitol or sorbitan, and the carbon numbers 6-22 or / with unsaturated fatty acid] - preferred triester. As the saturation of the medium chain fatty acid and long chain fatty acid is mentioned above.

[0021] About combination use of an emulsifier, the oil and fat composition of this invention is received. At least one sort chosen from sucrose fatty acid ester and polyglyceryl fatty acid ester 0.1 to 3 mass %. Succinic acid monoglyceride 0.01 to 2 mass %, and monoglyceride. At least one sort chosen from diglyceride, sorbitol fatty acid ester, and a sorbitan fatty acid ester so that the total amount of 0.1 to 3 mass % and this emulsifier may become 0.3 ~ 5 mass %. Since it is the further improvement in fly fitness, especially foaming control to make it add and contain, it is the most desirable.

[0018] The oil and fat composition of this invention produced by performing it above can blend the

itive agent which comes out as it is or is usually used for the oil and fat composition for cooking, it can be used for it as an oil and fat composition for cooking. As this additive agent, the improvement in preservation stability, the improvement in oxidation stability, the improvement in thermal stability, Polyglyceryl fatty acid ester aiming at the crystallization control under low pressure, etc., Sucrose fatty acid ester, a sorbitan fatty acid ester, vitamin E, ascorbic acid fatty ester, Lignan, coenzyme Q, phospholipid, orizanol, diglyceride, etc., Vitamin E, ascorbic acid fatty ester, Lignan, coenzyme Q, phospholipid, orizanol, etc. which expected an adult disease prophylactic action, a lifestyle-diseases-prevention operation, oxidation deprecant action in the body, and an abesity prophylactic action are mentioned.

9]The oil and fat composition for cooking of this invention is equivalent to the cooking oil already marketed, such as oleum rapae, corn oil, safflower oil, and soybean oil, or has the flavor and it is usable to a dressing, mayonnaise, margarine, confectionary, a cake, a drink, etc. which the foodstuffs containing fats and oils not to mention the ability to use it for cooking of stir-fried, deep-fried dishes, marinade, etc. Although the characteristic of flavor changes with kinds of each article, it is possible to make the clean dish in which the taste of the ingredient was employed efficiently. The oil at the time of fry cooking bounds, and a degree is equivalent to usual cooking oil, or less than it. The operation to which the lipid concentration in blood falls is also expectable by using continuously a proper quantity of oil and fat compositions for cooking of this invention.

[10]

表1 油酸組成物の分析値 (質量%)

分析値	油酸組成物の分析値 (質量%)				
	油酸組成物1	油酸組成物2	油酸組成物3	油酸組成物4	油酸組成物5
オレフィン酸	1.5	1.5	1.5	1.5	1.5
MOL	1.5	1.5	1.5	1.5	1.5
MIL	1.5	1.5	1.5	1.5	1.5
M2L	4.4	4.4	4.4	4.4	4.4
M3L	3.8	3.8	3.8	3.8	3.8
油酸組成	1.4	1.4	1.4	1.4	1.4
1:8:0	4.5	4.5	4.5	4.5	4.5
1:10:0	0.0	0.0	0.0	0.0	0.0
1:12:0	0.0	0.0	0.0	0.0	0.0
1:14:0	0.0	0.0	0.0	0.0	0.0
1:16:0	3.2	3.2	3.2	3.2	3.2
1:18:0	1.5	1.5	1.5	1.5	1.5
1:18:1	4.0	4.0	4.0	4.0	4.0
1:18:2	17.9	17.9	17.9	17.9	17.9
1:18:3	8.8	8.8	8.8	8.8	8.8
others	0.0	0.0	0.0	0.0	0.0

注: MOL: 油酸組成物1, MIL: 油酸組成物2, M2L: 油酸組成物3, M3L: 油酸組成物4, others: 油酸組成物5

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ble 2]

表2 油酸組成物の分析値 (質量%)

分析値	油酸組成物の分析値 (質量%)			
	油酸組成物6	油酸組成物7	油酸組成物8	油酸組成物9
オレフィン酸	0.1	1.5	1.5	1.5
MOL	3.4	3.4	3.4	3.4
MIL	25.6	25.6	25.6	25.6
M2L	70.9	70.9	70.9	70.9
油酸組成	5.0	5.0	5.0	5.0
1:8:0	1.8	1.8	1.8	1.8
1:10:0	0.0	0.0	0.0	0.0
1:12:0	0.0	0.0	0.0	0.0
1:14:0	0.0	0.0	0.0	0.0
1:16:0	3.5	3.5	3.5	3.5
1:18:0	2.1	2.1	2.1	2.1
1:18:1	6.6	6.6	6.6	6.6
1:18:2	20.9	20.9	20.9	20.9
1:18:3	10.2	10.2	10.2	10.2
others	0.3	0.3	0.3	0.3

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表3 油酸組成物の分析値 (質量%)

分析値	油酸組成物の分析値 (質量%)	
	油酸組成物10	油酸組成物11
オレフィン酸	2.8	2.8
MOL	21.0	21.0
MIL	46.5	46.5
M2L	30.7	30.7
油酸組成	18.5	18.5
1:8:0	5.9	5.9
1:10:0	0.0	0.0
1:12:0	0.0	0.0
1:14:0	0.0	0.0
1:16:0	3.1	3.1
1:18:0	1.5	1.5
1:18:1	4.6	4.6
1:18:2	16.7	16.7
1:18:3	8.4	8.4
others	0.0	0.0

[0032]

[Table 4]

表4 油酸組成物の分析値 (質量%)

分析値	油酸組成物の分析値 (質量%)		
	油酸組成物12	油酸組成物13	油酸組成物14
オレフィン酸	0	0	0
MOL	0	0	0
MIL	0	0	0
M2L	100	100	100
油酸組成	0.0	0.0	0.0
1:8:0	0.0	0.0	0.0
1:10:0	0.0	0.0	0.0
1:12:0	0.0	0.0	0.0
1:14:0	0.0	0.0	0.0
1:16:0	10.5	10.5	10.5
1:18:0	3.8	3.8	3.8
1:18:1	22.8	22.8	22.8
1:18:2	17.2	17.2	17.2
1:18:3	7.6	7.6	7.6
others	0.3	0.3	0.3

[0033] The example 84-week old Wistar system male rat was made to carry out free ingestion of the feed which did 25 mass % addition of soybean oil (made by the Nissin Oil Mills, Ltd.) (contrast) (triglyceride composition and fatty acid composition are shown in Table 4). The oil and fat in compositions 1, 6, 7, and 8, or 10 for eight weeks. The presentation of feed is shown in Table 5. In order to prevent the shortage of essential fatty acid, 3 mass % addition of soybean oil was done to all the feed. The addition to feed was adjusted with the energy density using what the U.S. nutrition meeting recommended the vitamin and the mineral. It dissected each eight groups at a time after eight weeks of experimental diet administration, and visceral fat mass was measured. In order to measure the amount of skinfold thickness, the dead body was freeze-dried and the fat content was measured using Soxhlet. The result of the rat bred for eight weeks is shown in Table 6. The significant difference was seen statistically [the amount of feed intake, *****, and tail length / no] at experimental plots. The amount of visceral fat and the amount of skinfold thickness of the rat which were bred for eight weeks showed the low value intentionally statistically by the oil and fat compositions 1 and 6 and seven groups. The medium chain fatty acid occupied from the result of an animal examination to the total fatty acid which constitutes an oil and fat composition comparatively. And when the rate of triglyceride occupy to all the triglyceride of having two medium-chain-fatty-

